

Quote of the Month: "Science is Organized Knowledge" - Herbert Spencer

## A WORD FROM THE:

Administration

Accelerator Div.

ES&F Div.

Acc. R&D Div.

Operations



### NOTE FROM OUR CHAIR: Thomas Roser

Just as last year we again scheduled the start-up of the RHIC run to occur while a number of snow storms hit Long Island. Despite this added challenge the RHIC run is progressing well and as of this writing we are 3 weeks into the high luminosity 200 GeV polarized proton run, the first part of this year's RHIC run. Already new record peak and average luminosities have been achieved.

Last month a number of us went to Chicago for a review of the cost of eRHIC, the version of the Electron Ion Collider we are proposing. The estimated cost of 756M in this year's dollars and the completeness of the cost estimate were very well received by the review panel. Jefferson Lab also presented the cost of their version of an Electron Ion Collider. Their cost estimate was also quite credible, although the price tag is higher and the performance lower. The purpose of this review was not to select either the BNL or JLab proposal but to establish an approximate cost for a future Electron Ion Collider as an input for the ongoing Nuclear Physics Long Range Planning effort. For this purpose I am quite certain that this review of the EIC cost estimate was very successful.

[▶ Arrivals/Departures](#)

 Safety Stats

## DID YOU KNOW??

**Check out who received an employee Service Award this year!** Collider-Accelerator Dept. employees who received a [Service Award](#).

**Check out who received an employee [Spotlight Award](#) this year!**

**Congratulations goes out to Sandy Asselta on the birth of her daughters second child!** ~ His name is Grayson Mark Abramowitz and was born Dec. 11, 2014. To see pictures of Greyson [click here](#)

**Steve Bellevia** captured "Galaxy Pair M18 & M82 (if you haven't seen it, it is very cool) & caught the "Moon-Venus-Mars Conjunction" (A must see if you missed it) - See the pictures [here](#).

## EVENTS/SEMINARS...



Check out the [BNL Calendar](#) for upcoming events & Seminars or the [Upcoming Conferences & Workshops](#) page for workshops and Conferences happening at BNL.

Mar. 10 - (Brookhaven Center | 8:30am) BWIS Event

Mar. 10,17,24,31 - (Bldg 490 - LCR | 12pm) Health Promotion Program Lecture

Mar. 10 - (Bldg 734 ISB- SR 2nd fl Rm 201 | 2pm) Sustainable Energy Technologies Seminar "Surfactant Free Synthesis of Plasmonic Nanoparticles and Their Application in Optical Detection of Explosives and Ions" Presented by: Devika Sil, Temple U., Philadelphia

**Congratulations CAD - We have only had 3 first aid cases this fiscal year, no recordable and no DART cases!**

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## IN OTHER NEWS...

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***A Telescope that tells you when to look up ~*** A massive digital camera will begin taking detailed snapshots from a mountaintop telescope in Chile in 2021. ... [Read about it](#)

***For Netanyahu and Obama, Difference Over Iran Became a Chasm ~*** Over six years of bitter disagreements about how to deal with the Iranian nuclear threat, President Obama and Prime Minister Benjamin Netanyahu of Israel kept running into one central problem: The two leaders never described their ultimate goal in quite the same way ....[read about it.](#)

***Get Ready for Another Real Estate Bubble ~*** Real estate prices increased again in January, with several states reaching new historic highs... ~ [read about it.](#)

Mar. 11 - (Bldg 400 | 12pm) Tax Workshop

Mar. 11 - (Bldg 400 | 12pm) BSA Noon Recital

Mar. 12 - (Bldg 510 | 3pm) Particle Physics Seminar "Discoveries that changed the world: 1932 1942 James Chadwick & Lise Meitner"  
Presented by Gerard Lander, EITU

Mar. 24 - (Bldg 510 SSR | 11am) Physics Colloquium

***Do you have to give a talk?***

**Public Speaking Techniques:**

**Verbal & Non-verbal**

***Presented by:***

***Theodore Sampieri Ext: 4894***

***12:00 – 1:00 Fridays***

**CAD Building 911**

***Large Conference Room: 2<sup>nd</sup> Floor***

## NOTE FROM OUR ADMINISTRATION: S. LaMontagne



If you are reading this, you are expecting admonishments to spend wisely, curtail spending, delay spending, make do, reuse or do without. While I urge you to do all of the above, I struggle with how to frame the severity of this year's budget constraints in a way that drives the response I would like to see.

Current year budget authority for RHIC Operations of \$140M is flat with our prior year budget authority. That is, we opened this year with exactly as much money as we had at the start of FY 2014. We are spending at a faster rate in FY 2015 than in FY 2014 and that is of concern. Cost through February 28 of this year totaled \$54M as compared to \$49M in the first five months of FY 2014. That \$5M difference is greater than the escalation we would have received on last year's funding had we had the benefit of an inflationary increase in funding. Another way to look at this is that we have consumed all of the inflationary increase in funding we had hoped to receive for the year, in the first five months of this year. This is ominous as we have yet to see the impact of incremental cost associated with operations in our cost performance.

There is no escaping the reality that with a flat budget, the only way in which we can accommodate salary increases which impact not only the cost of our direct labor, but also drive increases in trade labor, health physics support, waste management support and space management, is to reduce material expenditures. So . . . how are we doing on M&S expenditures as compared to last year? There, too, the trend is disturbing. Material cost during the first five months of FY 2014 was \$5M as compared to \$5.7M in FY 2015.

On a brighter note, the FY 2016 budget guidance provided by the Nuclear Physics Program Office is encouraging. Escalation in excess of 3% on our operating budgets will, in part, help us to compensate for this year's flat budget.

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## NOTE FROM OUR ACCELERATOR DIVISION: Wolfram Fischer



We are now three weeks in RHIC physics operation with 100 GeV polarized proton operation, and have already exceeded the luminosity performance of Run-12 when we ran in this mode for the last time. Our goal of starting physics on 9 February, which we missed by just a day, even though we were slowed down by now 3 full days of lab closures due to severe winter weather. The injector chain from the polarized source to the AGS has demonstrated much better performance than last year with significantly better emittance at the same intensity. Vincent Schoefer, the Run Coordinator, will now increase the bunch intensity in RHIC towards our goal of doubling the luminosity. This is possible not only because of the improved injector chain but also because we are now using electron lenses in RHIC that compensate for the head-on beam-beam effect. Meanwhile the Linac has demonstrated a new average current record of 142 micro-A for BLIP, and by exceeding 140 micro-A has met the goal of and intensity upgrade Accelerator Improvement Project more than a year ahead of schedule. Congratulations to the Deepak Raparia, Vinnie LoDestro and the whole Linac team.

The catalog of all Technical Notes is <http://www.rhichome.bnl.gov/AGS/InternalReports.html>, and it is linked from both the Department and Accelerator Division home pages.



## NOTE FROM OUR EXPERIMENTAL SUPPORT & FACILITIES DIVISION: Phil Pile



RHIC Run15 is progressing very well. We are at the beginning of the fourth week in the “physics” mode (100 x 100 GeV polarized protons) for the machine and experiments. The integrated luminosity to this point is on the “Maximum” luminosity projection trajectory. The experiment goals for both STAR and PHENIX are lofty but can be met with the planned 9 physics weeks if we stay on the maximum luminosity curve. The maximum luminosity curve assumes a 3 week ramp up period followed by steady high luminosity running. If at this point we integrate 33 pb<sup>-1</sup> per week (we totaled about 13 last week) for the remaining 6 weeks we will stay on the maximum luminosity trajectory. Then there is polarization. The beam polarization is holding at just under 60%, as determined using the hydrogen jet target. The machine goal for polarization this year is 63%. The experiments assume 60% in their goal setting so we are not too far from this. The figure of merit for luminosity and polarization goes as luminosity times polarization squared or to the fourth power, depending on whether the polarization is transverse or longitudinal, so polarization really matters! Keeping the polarization up as we increase the luminosity will be a challenge. Further increases in luminosity will be dependent on the performance of our new electron lens system, presently being commissioned. Once the lens’ electron currents reach design goals the lensing effect the electron beams have on the Blue and Yellow proton beams should erase about half of the troublesome “beam-beam” interaction that limits the per bunch proton beam intensity. So, we are eagerly watching as the eLens is brought into full operation. Next up will be two short two week runs each with 100 GeV polarized protons colliding with 100 GeV/n gold and then aluminum beams. With that Run 15 will end with cryo warm-up beginning about 19 June.

sPHENIX update – The BaBAR superconducting solenoid arrived on site Monday night, February 3 and was unloaded into building 912 the next day, completing its journey from the west coast (SLAC). Acceptance testing is progressing and a low current test at superconducting temperature will follow. Cryogenic cooling for the device will come from the ERL cryo facility in 912. Plans for a full current test are being formulated.

Commissioning for the new Raster system instrumentation went well. Except for one of the two current transformers, all new instrumentation is operational and welcomed to the BLIP operators. Phase I of the LINAC intensity upgrade is also progressing well. In fact one goal for this phase, 140 microamps average beam current, has been exceeded. Unfortunately, BLIP cannot safely use 140 microamps as the targets may fail due to insufficient cooling (a 115 microamp administrative limit is in effect). A deliverable (2016 time frame) from the Linac intensity upgrade project is an assessment of the feasibility of doubling the LINAC beam current. If this is possible and costs are within reason this will likely be the next major BLIP upgrade requested. The Raster magnet will be installed this fall and with this we should be able to take advantage of the presently available 140 microamps and the available current from a x2 Linac intensity upgrade. The first BLIP target for Sr-82 production was processed during the first week of February and Sr-82 sent to customers the following week. This week we are processing our second target. Our first R&D irradiation was carried out last week. Later this month we plan to irradiate a thorium target for 10 days, concurrent with Sr-82 production. The irradiated thorium target will be shipped to ORNL for processing to extract actinium (Ac). The isotope of interest is the alpha emitter Ac-225 and has potential for widespread use in cancer therapy. BNL is part of a three lab consortium (with ORNL and LANL) collaborating on advancing the production of Ac-225. BLIP is scheduled to operate through June but may be asked by DOE to continue operations through July. This group has in the past hosted an annual Summer School in Nuclear and Radiochemistry. Funding for this school was in jeopardy up until late last month. DOE successfully argued to restore funding so the school will once again be hosted by BNL this summer. This is an intensive 6 week undergraduate lecture and laboratory course with students competitively selected. Thanks go to DOE for their efforts to provide funds for this school!

The next NSRL run will begin on 14 March with two days of beam for electronics tests for a non-NASA project. NSRL beams (Kr, Xe and Au) will be used to test the radiation resistance of some electronics components to be installed in the Alpha Magnetic Spectrometer (AMS), an instrument mounted in the International Space Station designed to search for “Dark Matter”. The NASA experiments (NSRL 15A) will begin on Monday, 16 March and run through Friday, 8 May. NSRL 15B will follow within a few days and is to be scheduled.

## NOTE FROM OPERATIONS: Paul Sampson



RHIC startup began in late January, with first beam in the Blue Ring on the 23<sup>rd</sup> of January. During the last week in January and the first week in February, work on the Yellow Dump Kicker and e-lens was conducted in the daytime and beam development in the late evenings and overnight. Despite this and many winter storms and lab closures, the startup effort has been quite successful and the start of Physics was on February 10<sup>th</sup> (original estimate was the 9<sup>th</sup>).

While the Blue e-lens bake-outs were in progress, Commissioning of the Yellow was completed. Presently, both the Blue and Yellow e-lenses are routinely operating. Also in RHIC, conditioning of the 56Mhz RF cavity, installation and testing for CeC is ongoing. During machine development in February, the Ferrite tuners for the RHIC acceleration cavities were commissioned and are now operational. The Experiments are presently taking Physics Data and are running well.

Setup and optimization in the injectors continues. With efforts focusing on increased polarization, intensity and reduced emittance.

The Booster and R-line are being set up for NSRL and other users this month, with first beams on target scheduled for the week of March 13<sup>th</sup>.

After a brief interruption in February BLIP has been running well.

Maintenance periods are presently being held on a bi-weekly schedule, with APEX on alternate weeks.

The "[RHIC Broadcast](#)" link displays the latest schedules for testing, power disruptions, outages and daily schedules.

To view a list of approved work for the next maintenance or to review past results, go the [Job Request System](#) and select the appropriate date. This link is behind the firewall and requires privileges to view.

For weekly schedule updates see: [This Week, which can be viewed by all.](#)

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## ARRIVALS: Welcome!

Andy McNerney - (R&D Manager) Working in Preinjector Systems (Linac) with D. Raparia

## DEPARTURES: Farewell, you will surely be missed..

Roger Bonati - Last Day is Jan 21, 2015

Nina Rivera - Transferred to Superconducting Magnet Division Feb 2, 2015

## Guest Notices:

Jan 7 - Jun Tamura (Guest Scientist) working with M. Okamura

Jan 11 - David Hill (Student Collaborator) working with J. Fitzsimmons

Jan 21 - Mathew Gott (Guest Research Assoc.) working with A. Goldberg

Feb 5 - Kotaro Kondo (Guest Scientist) working with M. Okamura

Feb 24 - Kuanjun Fan (Guest Scientist) working with A. Zhang

Feb 24 - Tatsunobu Shibata (Guest Scientist) working with A. Zhang



**SAFETY STATS:** Peter Cirnigliaro - No Update

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**CONGRATULATIONS: Sandy Asselta**

Sandy's daughter Jen and husband Bryan welcomed a new baby boy Greyson into their lives in January. Here are a few pictures of him and his big brother Tyler.



**PHOTOS BY: STEVE BELLAVIA**

Galaxy pair, M81-M82 (Shot taken on Feb. 13th)



Moon-Venus-Mars Conjunction (Shot on Feb 19th)

